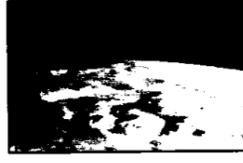




Dress rehearsal

Twenty years ago today, the crew of Apollo 10 was speeding toward the Moon for a dress rehearsal of the lunar landing approach. Story on Page 3.



Bubble, bubble

The Earth's atmosphere resembled a boiling cauldron in some of the Earth observations photos taken by the STS-30 crew. Photo on Page 4.

Space News Roundup

Vol. 28

May 19, 1989

No. 20

Apollo anniversary schedule becoming firm

By Linda Copley

Plans for a massive celebration to commemorate the 20th anniversary of the first manned lunar landing are coming together as JSC and the Clear Lake community prepare for an active week July 15-23.

Houston and the Clear Lake area's Space-week activities, which traditionally mark the week of the July 20 lunar landing anniversary observance, will include this year a series of technical briefings, panel discussions, and entertainment events at JSC and in the surrounding communities.

A series of technical briefings and panel discussions by Apollo-era veterans and NASA

experts, open to the public, free-of-charge, will be held in JSC's Teague auditorium throughout the week.

The discussions will deal with what we knew and learned about the Moon, how the landing sites were selected, what we would hope to learn through future visits and how decisions were made and missions were planned.

In a step back in time, an Apollo-era "splashdown" party for current and former NASA employees and contractors, their spouses and guests, is scheduled at the Gilruth Recreation from 4:30-

8:30 p.m., on Thursday, July 20. JSC expects as many as 5,000 to attend the evening's festivities.

An event open to the public and free to all will be the lighted boat parade and fireworks display named "A Thousand Points of Light." Planned by the Eagle Twenty Group, a non-profit organization of local Clear Lake businessmen, the event will assemble 1,000 boats on Clear Lake for the parade. At 3:17 p.m. CDT July 20, the exact time of the landing on the moon 20 years ago, the parade of boats will unfurl and fly American

flags. At precisely 9:56 p.m. CDT the boats will turn on their lights to commemorate the exact time Neil Armstrong first set foot on the surface of the moon. A fireworks display over the lake will follow.

On Friday, July 21, a gala black-tie anniversary banquet honoring NASA and the Apollo program, with remarks by Walter Cronkite, will take place at 7 p.m. in the Grand Ballroom at the Hyatt Regency Hotel in downtown Houston. On June 12, tickets will be offered for sale to JSC employees through the Exchange for \$65 per person; details as to how the tickets may be purchased have not been announced. The

Please see **APOLLO**, Page 4



Truly selects Lenoir, Kohrs for station

Acting NASA Administrator Richard H. Truly announced Thursday the appointments of two JSC veterans to the top space station posts, and asked one of them to study consolidation of the space station and space shuttle offices.

Truly appointed former astronaut Dr. William B. Lenoir to be associate administrator for space station, and asked JSC's Richard Kohrs to direct the Space Station Freedom Program.

Truly gave Lenoir the task of developing a plan for consolidating the Offices of Space Flight and Space Station, but not the two programs, based on his experience as associate administrator for space flight.

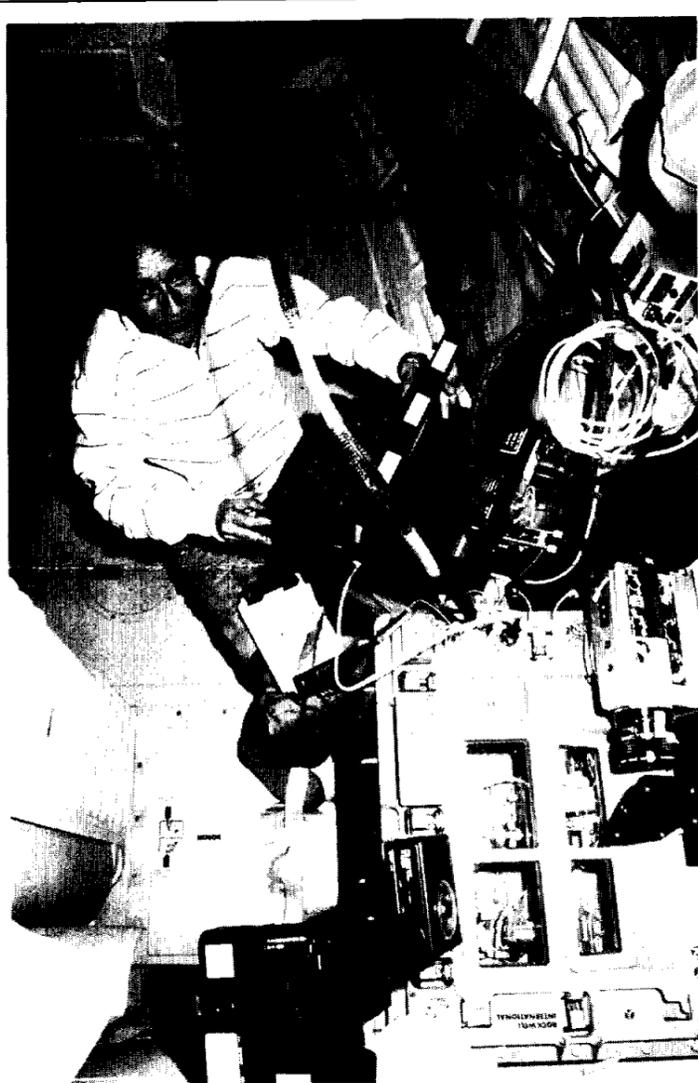
"We just deal with myriads of smaller problems and too many of them kept bubbling upstairs and it just wasted our time," Truly said. "NASA's a busy, busy agency and I think the two programs would be run much more effectively."

Kohrs, who will leave JSC and move to NASA Headquarters, will be responsible for design, development and future operations of the space station. Kohrs currently is deputy director of National Space Transportation System Program.

Ray Tanner becomes the deputy director, Space Station Freedom Program and Operations at Reston, Va.

"Bill Lenoir is highly qualified and brings with him experience in NASA, space flight and private sector activity. I am extremely pleased that he is

Please see **TRULY**, Page 4



STEP INTO MY OFFICE—STS-30 Mission Specialist Mary Cleave devotes herself to the Fluids Experiment Apparatus, complete with lap-top computer and 8 millimeter video camcorder, on the middeck of *Atlantis*. The on-orbit photo was one of several released during the crew's post-mission briefings Thursday.

Child care center gets final approval

Information session next week; groundbreaking ceremony June 10

By Linda Copley

The formal groundbreaking for the long-awaited on-site child care center for JSC employees is scheduled for June 10, and the completed center is expected to open May 1, 1990.

The 3,600-square-foot facility, which gained JSC Director Aaron Cohen's final approval earlier this month, will be operated by a non-profit corporation on a 1.89-acre site near the Gilruth Recreation Center. Initial plans call for the center to provide care for 62 children between the ages of six weeks and five years.

"It's great to see us finally catch up to other NASA centers in providing this type of service to our employees," said Bob Kehoe, an engineer in the Facilities Planning Office and Center Operations representative on the JSC committee that studied the center's feasibility.

"The tremendous response we had to our survey confirmed the desire of employees for on-site child care. And we knew it would fall within facilities planning to design a safe, economical, comfortable facility that met all the state and local requirements," he said.

The as-yet-unnamed facility will be operated as a non-profit corporation registered under the name of Space Family Education Inc. and managed by an elected board of directors. Membership in the corporation will be open to all federal employees, military personnel, JSC Exchange employees and on-site contractor employees

working at JSC.

Interested employees are invited to an information session scheduled for 4 p.m. Wednesday in Teague Auditorium. There they will be given the opportunity to join the corporation (for a \$5 membership fee) and to fill out forms regarding the ages and number of any children they would like to enroll in the center. (It is not necessary to have children enrolled in order to be a corporation member, but all children enrolled in the center must have a member as a parent or guardian).

Within a few weeks of the information session, all those who register as members will be invited to attend a general membership meeting and vote on the board of directors membership. Once elected, the new board will monitor construction of the facility, hire a facility director, and manage start-up, operations, and financial activities. The facility director, who will serve as a non-voting member of the board, will hire the remaining staff and be responsible for day to day operations.

"The goal will be to provide quality, educationally directed child care at a reasonable cost and to raise the necessary funds to furnish and enhance the facility," said Mary Allen, Human Resources Employee Services Section chief and chairman of the operations panel of the current JSC child care committee.

The proposed rates, subject to final approval, will be announced. Please see **CHILD CARE**, Page 4

Columbia work progresses; flight sequence changes

By Kyle Herring

Routine pre-flight preparations continued this past week for Space Shuttle *Columbia*'s return-to-flight on STS-28, a Department of Defense (DOD) mission scheduled for late July.

As those preparations continued, NASA announced a new listing of the order of missions between the Galileo and Astro-1 Spacelab missions. After STS-28 and the STS-34 Galileo mission, the flight sequence will be: a DOD flight previously delayed to protect the Galileo window, the Syncom IV deployment and retrieval of the Long Duration Exposure Facility (LDEF), another DOD mission, the Hubble Space Telescope flight and the Astro-1 mission.

No planning dates for the missions after Galileo have been determined,

but a full manifest is scheduled for release in the next few weeks.

At Kennedy Space Center, *Columbia*'s payload bay doors were closed Monday to allow for tile work around joints. About 170 tile cavities remained

to be filled on the orbiter. Work has begun on landing gear tires, with installation of two of the four main gear tires accomplished earlier this week.

Functional testing of the side entry/exit hatch was performed with open/close cycling of the hatch. Frequency response testing of the main engines continued this week to ensure the integrity of connections to the aft end of the vehicle. Leak checks were begun as was the installation of the heat shields around the three liquid powerplants.

Please see **COLUMBIA**, Page 4



Kennedy Space Center tile technicians continue their work on the Space Shuttle *Columbia* as one of the shuttle main engines is prepared for installation. Work toward the late-July launch of STS-28 is progressing.

Astronauts picked for 1990 missions

By Jeff Carr

Shuttle crew members have been named for two Department of Defense-dedicated Shuttle missions scheduled for mid-1990.

Air Force Col. Richard O. Covey will command STS-38, a classified DOD mission aboard the Space Shuttle *Atlantis*, in May of 1990. Covey's pilot will be Navy Cmdr. Frank L. Culbertson. Assigned as mission specialists are Marine Col. Robert C. Springer, Air Force Maj. Carl J. Meade and Army Capt. Charles D. "Sam" Gemar.

Named as mission specialists for STS-39, another DOD mission scheduled for July 1990, are Air Force Col. Guion S. Bluford Jr., Richard J. Hieb, and Charles Lacy Veach. The remainder of the seven-member crew will be assigned later. The early assignment of mission specialists will provide for long-range crew participation in payload training and integration.

Covey has flown twice previously as pilot on missions STS-511 in August 1985 and STS-26 in September 1988.

Please see **ASTRONAUTS**, Page 4

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m. to 2 p.m. weekdays:

General Cinema (valid for one year): \$3.50 each.

AMC Theater (valid until May 31): \$3 each.

Sea-Arama Marineworld (Galveston, valid until Aug. 17, 1990): adults, \$8.75; children \$5.50.

Sea World (San Antonio, year long): adults, \$17.25; children \$14.75.

Astroworld: adults, \$14.12; children under 4, \$11.99; season pass, \$32.36. Waterworld, \$8.15.

Salt Dome Festival-Concert (June 3, West Chambers County Houston Raceway Park, includes Willie Nelson, Ray Benson, Asleep at the Wheel, Tony Perez and Chaparral): \$12.50.

Astros vs Los Angeles (June 3, 7:35 p.m., Astrodome), \$7.

Variety dance (May 19, 7 p.m., Recreation Center; music by "Max Q"; chicken dinner): \$11.

Tour of the World Figure Skating Champions (June 6, 8 p.m., featuring the 1988 and 1989 gold, silver and bronze medalists at the Summit): \$18.

JSC

Gilruth Center News

EAA badges—Dependents and spouses may apply for a picture I.D. 6:30-9:30 p.m. Monday-Friday.

Defensive driving—Course is offered from 8 a.m.-5 p.m. May 20 or June 17: \$22.

Weight safety—Required course for those employees wishing to use the Rec Center weight room. Upcoming classes will be 8-9:30 p.m., June 14 and June 29: \$4.

Aerobic and exercise—Both classes are ongoing: \$24.

Taekwondo and Hapkido—Korean art of self-defense, mental and physical discipline. Classes are 6:30-8:30 p.m. Tuesday and Wednesdays, beginning May 16): \$40 per person per month.

Tennis lessons—Beginning tennis, Mondays 5:15-6:45 p.m. Six week course begins June 19: \$32 per person.

Summer Softball Sign-ups—Summer softball sign-ups will be held the week of May 22-26 at the Gilruth Recreation Center. For information, call x35789 or x30304.

Scuba Lessons—The course includes classroom and pool sessions along with an open water dive. The 5-week class begins July 10. Cost is \$45 at sign-up, plus additional fees.

JSC

Swap Shop

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Property

Sale: Seabrook, 3-2-2, approx. 1,800 sq. ft. recently remod., lg. den, FPL, new A/C, heater, roof, carpet, spa w/redwood deck, all brick corner lot on cul-de-sac, assum. 9 7/8%, \$70,000 by owner. Richard, x30271 or 474-9334.

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Sale: Camino South, 3-2-2, pool, new roof, A/C, heater, 9.5% assum., \$75,000. 488-5688.

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'86 Plymouth Chrysler Vista mini van, two-tone blue/silver, loaded, all pwr., tinted windows, AM/FM/cass., \$6,000. Wanda, 559-1053.

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'85 Dodge Omni GLH turbo, full roll cage, spare roller, eight wheels, fun, fast, less than 1.1K mi. on rebuild, \$3,000, spares negot. x32949.

'71 MG midget for parts, new radiator, clutch, master cylinder, BO. 333-4734.

Today

Cafeteria menu—Special: tuna and noodle casserole. Entrees: liver and onions, deviled crabs, roast beef with dressing. Soup: seafood gumbo. Vegetables: whipped potatoes, peas, cauliflower.

Monday

Cafeteria menu—Special: Breaded cutlet. Entrees: beef chop suey, polish sausage with German potato salad. Soup: French onion soup. Vegetables: okra and tomatoes, green peas.

Tuesday

BAPCO to meet—The Bay Area PC Organization will meet at 7:30 p.m. May 23 at the League City Bank and Trust. For more information, call Earl Rubenstein, x34807, or Ron Waldbillig, 337-5074.

Cafeteria menu—Special: fried chicken. Entrees: Salisbury steak, shrimp Creole. Soup: split pea soup. Vegetables: mixed vegetables, beets, whipped potatoes.

Wednesday

NMA to meet—The NASA/JSC Chapter of the National Management Association (NMA) will meet at 5 p.m. May 24 in the Gilruth Recreation Center ballroom. Social hour starts at 5 p.m. and dinner at 6 p.m. The featured program will be a management panel discussion including John Aaron, manager of the Space Station Projects Office; William J. Huffstetler, manager of the New Initiatives Office; and Richard Kohrs, deputy director, NSTS Program Office. Call Gerald Chapman at x34848 for more information.

Cafeteria menu—Special: stuffed bell pepper. Entrees: catfish with

hush puppies, braised beef rib, BBQ plate, Wieners and beans, shrimp salad. Soup: seafood gumbo. Vegetables: corn O'Brian, rice, Italian green beans.

Thursday

Shuttle-C users' conference—Marshall Space Flight Center and Shuttle-C contractors will host a free Shuttle-C Users' Conference May 25-26 in Huntsville, Ala. The program is designed to fully explain Shuttle-C and provide potential users an opportunity to help define needs and requirements for a heavy-lift launch system. For more information, call David Christensen, 205-721-5507.

JSC Blood Drive—JSC will hold its second blood drive from 8 a.m. to noon and 1-4 p.m. May 25 at the Gilruth Recreation Center. Call Helen Crawford, x34159, for more information.

Cafeteria menu—Special: barbecue smoked link. Entrees: beef stroganoff, turkey and dressing. Soup: chicken noodle soup. Vegetables: lima beans, buttered squash, Spanish rice.

May 26

Cafeteria menu—Special: meat sauce and spaghetti. Entrees: baked scrod, liver and onions, fried shrimp. Soup: seafood gumbo. Vegetables: green beans, buttered broccoli, whipped potatoes.

June 5

Blood pressure screening—In observance of National Blood Pressure Week, the JSC clinic will conduct free blood pressure screening clinics in the lobbies of JSC buildings, the Beta and Vanguard buildings, Ellington Field, and the

Bldg. 8 clinic on varying days and times during the week of June 5-9. Contact the JSC clinic at x34111 for more information.

June 16

CLCTS awards banquet—The annual Clear Lake Council Technical Societies' Awards Banquet will be held June 16, at the Gilruth Recreation Center, beginning at 6:30 p.m. The featured speaker will be Richard Underwood, discussing "Space Through the Eyes of the Camera." Tickets are \$10; the deadline for reservations is June 12. Society members or the general public wishing to attend should contact Marcia Taylor at 483-0195.

Listen!

Need the latest information on what's happening at JSC?

The JSC Employee Information Service may have just what you're looking for.

Updated every day at 11:30 a.m., the recorded announcement can be reached by calling:

483-6765

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'85 Pontiac Fiero, bright red, auto., lots of new items, \$4,400. 480-0829 or 922-1473.

'88 Mazda 323 SE coupe, 5-spd., A/C, AM/FM/cass., 25K mi., ex. cond., \$6,600. Jay, 335-7134 or 481-2335.

Boats & Planes

'75 Bayliner, 21 ft. w/cuddy, new V-6 Crusader, 165hp, sleeps 4 comfortably, has sink, toilet, ice box, holds 54 gal. of fuel, will trade for camper trailer or \$4,900 cash. George, 944-9761.

Cycles

'79 KZ 1000, fairing, saddle bags, shaft drive, \$800. Will, x36050 or 332-6986.

'84 V65 Magna, 1100cc, mint cond., sport fairing, helmet, cover, always garaged, \$2,300. 997-2013.

Univega, Maxima Sport, 21", 12-speed bicycle, Lawee design, Suntour/Shimano equip. w/traps and cage, \$125. Samouce, x35053 or 482-0702.

'86 Honda "Interceptor VFR," gear-driven cam V4, like new, beautiful, red/white/blue, garage kept, 1,300 mi., \$3,700. x31588 or 488-1326.

'85 Honda Shadow 500, ex. cond., new batt., low mi., \$1,600. Shari, x38504 or 996-7736.

Raleigh-Rampar bike, 10 spd., 27", water bottle, book rack, speedometer-odometer. Bryan, x32827.

Audiovisual & Computers

Atari 7800 w/joysticks, 1 yr. old, w/13 new games, 7800 Karateka, baseball, Mario Bros., Dig Dug, F-18 Hornet, \$350 value, \$225, OBO. 280-2039.

Radio Shack PC-6 personal computer w/ printer, cass. interface, and cable, \$125; Casio fx-5000 scientific formula calculator, 128 built-in equations, \$35. Tom Clark, 483-9842.

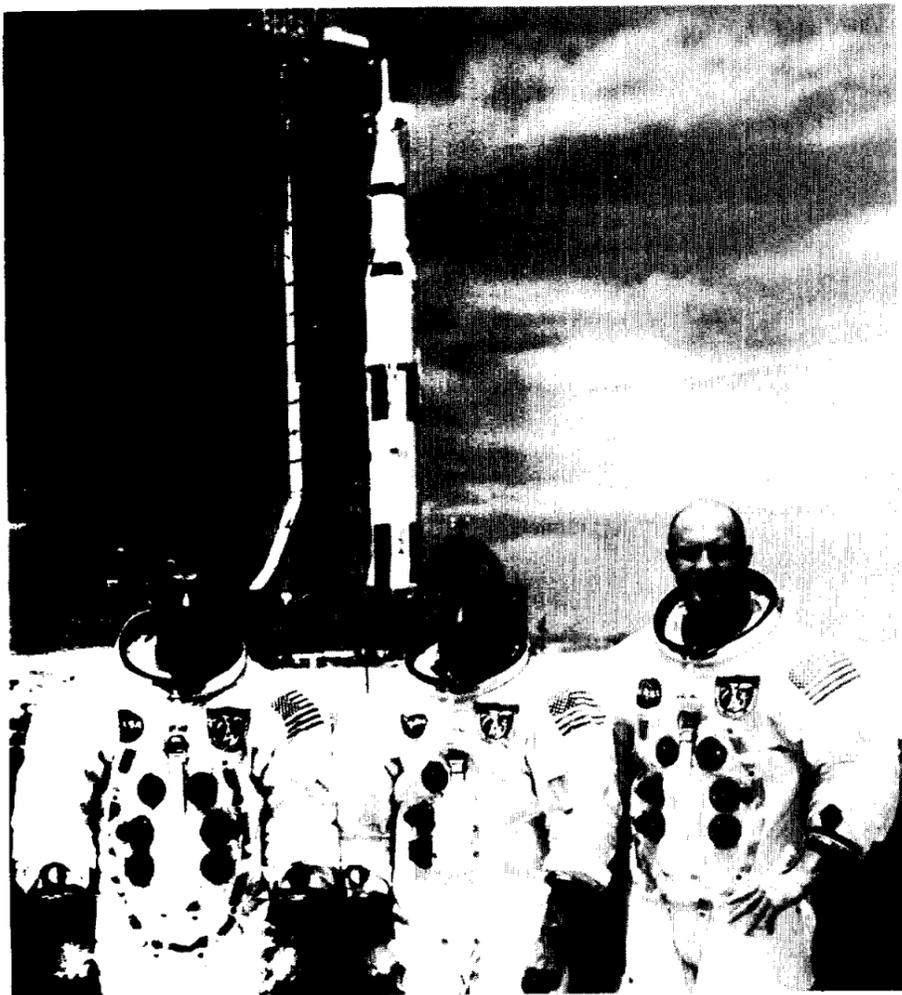
Enable/OA integrated software pkg., incl. spreadsheet, data base, graphic word processor, communications, etc., brand new, unopened box, 13-3 1/2" disks, 8 manuals, for IBM PC or compatibles, \$250. Jeff, x31974 or 997-1538.

Household

Sensation waterbed, queen size, tube type, looks like a reg. mattress, 5 mos. old, \$400, was \$500. David, 282-3827 or 554-5514.

Tall lamp, wrought iron w/wood base, \$25; lg. footstool on rollers, \$25. 488-5564.

DR table w/extra leaf, \$75; Gypsy antique iron pot, \$50; a number of nice pictures and ant. English paintings; ant. wood ironing board, \$35; ant. copper wash pot, \$30. 488-556



APOLLO 10



Stage-setting mission seeks purchase for lunar landing in Sea of Tranquility

By Brian Welch

The Moon as viewed from Earth was a thin crescent when the terminal count picked up at 2:49 a.m. Eastern time on May 18, 1969.

Atop Launch Pad 39B was Apollo Saturn vehicle 505, configured for lunar orbital flight. With both Command and Service Module number 106 and Lunar Module number 4 aboard, it was the heaviest rocket ever assembled. It's mission was to propel the crew and two spacecraft into low-Earth orbit, and then later to provide the power for a boost toward the Moon, last visited by the crew of Apollo 8 five months earlier.

This was a critical mission, a dress rehearsal for the first lunar landing, and in those days the superpowers' race to the Moon was still very much considered to be a dead heat. The Soviets had two probes, Venus V and VI, which had successfully reached Earth's sister planet on May 16 and May 17. And there had been talk of tests with a new heavy-lift booster in Soviet Central Asia. "It just shows again that we can't afford to get complacent," Wernher von Braun said the day Apollo 10 launched. "They're breathing down our necks, and in this planetary field they are clearly ahead of us." NASA's thinking was clear. Apollo 10 had to go well, by the book, or all bets were off. And the Soviets could still win the race.

Rocco Petrone, then the Director of Launch Operations at Kennedy Space Center, reported later that the countdown had been smooth. During the post-launch press conference, KSC Public Affairs Officer Jack King, anticipating the inevitable question, announced that NASA actually had been 569 millionths of a second off the planned launch time of 12:49 p.m. EDT.

"There is always a question of a few milliseconds, but when I see one of these large ones take off, I'm willing to accept it at 12:49," Petrone added dryly.

What eluded many on the ground that day was another condition of much more immediate concern to the crew of Apollo 10—the violent pogo effect which had been present as Tom Stafford, Gene Cernan and John Young rocketed into orbit.

They were the first all-veteran crew in NASA history (the only other two crews to carry that distinction would be Apollo 11 and STS-26), all accustomed to the relatively smooth ride of a Titan II. But as the ascent progressed, according to "Chariots for Apollo," the official NASA history, "the gigantic Saturn V first stage suddenly slammed Stafford, Cernan and Young forward and backward, until the cabin dials blurred before their eyes. Stafford tried to tell lead Flight Director Glynn Lunney's Mission Control team when the first stage of the vehicle dropped off, but he could not squeeze out the words. When the remainder of the stack steadied, the S-II second stage (already firing) had the same

pogo tendencies."

After one and a half orbits of the Earth, Lunney's team gave the go for firing up the third stage, the S-IVB, for the trans lunar injection burn. It was every bit as bumpy as the crew had now come to expect, but the injection was very precise and the S-IVB, with crew, CSM and LM aboard, was now, as Lunney said, at "35,595 feet per second fast and going away."

Not long after, Young separated the CSM, now known as "Charlie Brown," and in full view of millions watching in living color, docked with the Lunar Module "Snoopy" as the procedure was relayed to the ground over live television. A little later, the crew sent through the Goldstone antenna a live color view of most of the Western Hemisphere, from thousands of miles out in space.

The coast toward the Moon was relatively uneventful, although this crew, unlike Frank Borman's crew on Apollo 8, was able to see the Earth's satellite by the second day of flight. On the Earth, it was a waxing crescent, but with the help of Earthshine the Apollo 10 crew could see it almost full.

When they were at last nearing lunar orbit insertion, Stafford insisted the Moon looked to him like something made of plaster of Paris. At 75 hours, 55 minutes into flight, the big Service Propulsion engine fired and the retrograde maneuver slowed them into an orbit intended to mimic that planned for Apollo 11. When they

came around the far side, Stafford said, "Houston, tell the Earth we have arrived." They were now 60 miles above the Moon in a circular orbit, and the three began looking for the by now familiar landmarks, the ones which pointing to the primary landing sites for Apollo 11.

About six hours after going into lunar orbit, they began preparing the LM. The next day, Mission Control's wake-up music was "The Best is Yet to Come," and the preparations for descent began in earnest.

The moment of undocking became a moment of high concern, however. Stafford and Cernan, in the LM, found that it somehow had slipped three and a half degrees out of line with the CSM. There was concern that separating the two spacecraft might cause some of the latching pins to shear, thus making a redocking impossible. Back in Houston, the possibility of scrubbing the undocking and descent was very real. In his post-flight report, Lunney wrote that George Low, the Apollo Program Director, had leaned over his console at about that time and said that as long as the misalignment was less than six degrees, they should proceed. Low trusted the system and the engineers who ran the system.

The undocking proceeded. There was a pop as "Snoopy" pulled free. As they began their descent toward the surface of the Moon, Stafford and Cernan told Young not to get too lonesome and not to go off and leave them.

As the pair descended along the Apollo 11 approach path, reaching a low point of about 47,000 feet. Stafford's camera clicked off numerous pictures until the film jammed, leaving he and Cernan little to do except dump the descent stage and look at the scenery.

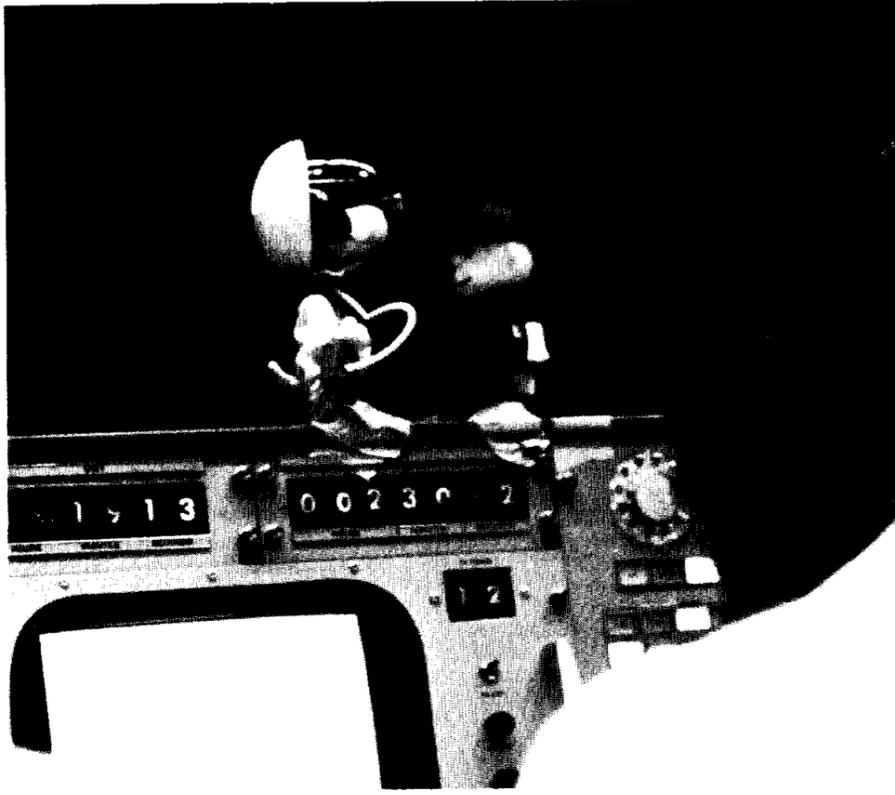
Just as they were about to perform that dump, the LM began throwing a fit of crazy gyrations across the lunar sky. Cernan reacted with an oath referring to Snoopy's parentage, as the LM continued to lurch about, changing the spacecraft's attitude by 30 degrees and nearing the limits of the inertial measuring unit. Stafford called out for Cernan to thrust forward, then hit the switch to get rid of the descent stage. As an alarm signaled that the engine was about to swivel over to a stop position, or gimbal lock, Stafford took manual control, made a big pitch maneuver and worked the attitude control switches to bring Snoopy back under control.

The whole recovery took only three minutes, and afterward it was discovered that the crew had made a switching error and set the abort guidance system they were testing on automatic instead of attitude hold. On automatic, the computer would take over guidance and start looking for the command module—not what the crew had in mind at the time.

The rendezvous of the sister spacecraft was flawless, and after settling in, the reunited crew set Snoopy free, sending the lunar module into solar orbit. They spent their last day in lunar orbit tracking landmarks, working on alignment exercises for the inertial platform and taking a series of stereo and sequence photographs to aid future landing site selections. Then, it was time to return to Earth, a journey that on a fast-return flight path would bring them back in 54 hours.

On May 26, 1969, less than two months from when the first men to set foot on the surface of the Moon would begin their journey, Apollo 10 streaked through the early morning darkness, landing in the Pacific Ocean only 6 kilometers from the prime recovery ship, the U.S.S. Princeton.

The trail had been blazed. The scene had been set. The ultimate Apollo success could almost be tasted.



Top left: Astronauts Gene Cernan, John Young and Tom Stafford pose in front of the Saturn V rocket that would carry them closer to the surface of the Moon than anyone before. Top right: The shiny surface of the Command Module (CM) reflects the lunar surface as the Lunar Module (LM) prepares to descend to within 47,000 feet. Left: Replicas of Snoopy and Charlie Brown, call signs of the LM and Command and Service Modules respectively, decorate a console in the Mission Operations Control Room.

Aerospace giants join Space Center Houston campaign

The appeal for funds to build the \$50 million Space Center Houston at JSC moved to the national level last week when the chief executives of McDonnell Douglas Corp. and Rockwell International announced they will personally join the campaign. John F. McDonnell and Donald R. Beall, chairmen of the boards of McDonnell Douglas and Rockwell respectively, will head the national corporate

campaign, designed to raise \$3 million of the total \$8 million needed.

"We're gratified that the top executives of these aerospace giants believe in our project," said Hal Stall, president of the foundation and JSC's director of public affairs. "Their companies have made important contributions to America's space program from its beginning. I am especially happy to welcome their

personal participation at such a significant level."

The national campaign was launched May 11 with initial commitments of \$1.2 million—\$400,000 each from McDonnell Douglas, Rockwell International and Lockheed Corp.

A total of about \$4.2 million has been raised to date. Revenue bonds will provide the remainder of the \$50 million needed to build the center.

In the meantime, work on the center's design is proceeding at a quickening pace. Stall said the foundation has arranged interim financing to assure the project remains on schedule pending successful completion of the fundraising campaign.

Thirteen members of the Walt Disney Imagineering design team visited JSC on May 8 for intensive briefings on major programs and

research projects that will be featured in the new center.

Space Center Houston is scheduled to begin construction late this year. Walt Disney Imagineering has been contracted to design the center, which is expected to attract an estimated 2 million visitors annually and contribute about \$100 million to the Houston economy during its first year of operation in 1991.

Women's Week program spotlights education

A theme of "Education: Back to the Future" will be the focus of activities marking JSC's 12th annual observance of Women's Week next Tuesday through Friday.

The four-day program, held at the Gilruth Recreation Center, will feature Dr. Pauline Clansy, counseling psychologist and director of psychological services for the Houston Independent School District, as the guest speaker at the May 23 general opening session.

A special event premiering this year will be the JSC Network, an exhibition of JSC directorates and contract organizations.

"Representatives from at least 26 different areas will be present in the Gilruth Ballroom from 11 a.m.—4 p.m. May 23 to highlight their areas' specific function within JSC, and what is unique to their particular part in supporting NASA's mission," explained Shirley Price, federal women's program man-

ager. "You might even call it 'NASA Pride,'" she said.

A series of workshops covering educational, career advancement, medical, financial, and self-improvement issues, including a discussion of plans for JSC's planned child care facility, will be offered throughout the week.

The annual Women's Week luncheon will be at 11:30 a.m. Friday, and will feature Cavett Robert, a motivational speaker, discussing "Change with Changing Times: Think People" in a keynote address. Reservations for the luncheon must be made by noon Monday; tickets are \$7.50.

Shuttle bus service will be available to the Rec Center for the week's activities. Bus schedules, luncheon ticket information, and a complete list of events is available by contacting Shirley Price, x30605, or Judy Stoval, x37733.

Last chance for asbestos training class

The final offering of the Level 1 training class for JSC employees and support contractor personnel who perform asbestos-related activities is scheduled at the Learning Center, Bldg. 226N, at 7:30 a.m. and 1:30 p.m. on Friday.

All personnel involved in asbestos-related activities must be in full compliance with the JSC Asbestos Control Manual, which includes taking the training course, by June 1.

The one and a half hour class covers asbestos characteristics, health hazards, work practices, engineering controls, personal protective equipment, and the manual. Attendees will be issued certification cards upon completion of the course and a short exam.

To register for the training session, call x36369. For additional information, contact the asbestos program manager at x33120.

Truly announces changes

(Continued from Page 1) willing to return to the government," Truly said. "In addition, Dick Kohrs' experience in the Space Shuttle program makes him the best choice to lead Space Station *Freedom* through the challenges facing this program, which is the linchpin of this nation's future in space. I can't imagine a better team of managers to guide the development of America's space station."

Lenoir is vice president and a board member for Booz-Allen & Hamilton Inc., Bethesda, Md., and manages that company's Space Systems Division. He was as a NASA astronaut from 1967 to 1984, flying as a mission specialist aboard *Columbia* in 1982. After STS-5, Lenoir directed and managed mission development in the astronaut office at JSC.

Earlier in the week, Truly, used his first message to employees as acting

NASA administrator to announce his appointment of Samuel Keller to the third highest position in the agency.

As associate administrator for space flight, Truly became acting administrator after former administrator James C. Fletcher and former deputy administrator Dale Myers left the agency.

Truly said he was "starting at the top" to reverse that process by appointing Keller as the new associate deputy administrator to replace Noel Hinners. Keller, with a broad background in program management and institutional programs, most recently was deputy associate administrator for space science and applications.

In a related development, Thomas L. Moser, acting associate administrator for the space station program, left NASA last week. The former JSC engineering director had been serving in that position since since April 30.

Apollo anniversary plans include JSC open house

(Continued from Page 1) banquet is sponsored by the American Institute of Aeronautics and Astronautics (AIAA) and the Spaceweek National Committee.

A public open house held at JSC on Saturday, July 22 and Sunday, July 23 will kickoff with a parade and rally on JSC grounds Saturday morning. Throughout the entire weekend, from 8 a.m. to 5 p.m., facilities not usually open to the public, as well as special exhibits including a T-38 astronaut training aircraft and a lunar landing training vehicle, will be available for viewing.

The Lunar and Planetary Institute will hold its first open house in 10 years, featuring special tours and exhibits, from 10 a.m. to 6 p.m. on July 22.

Boeing will offer guided tours by appointment of their flight equipment processing facilities at 1045 Gemini, Monday, July 17 through Friday, July 21, from 2 until 3 p.m. daily. Contact Julia Sorrels, 280-2023 for reservations.

A detailed list of the events and

contacts includes:

July 15: 7 p.m., Lunar Rendezvous Space Race, Gilruth; Aerospace and Air Exhibit, (time to be determined) Ellington Field, sponsored by the Civil Air Patrol;

July 17: 11 a.m.-2 p.m., Speakers program, Teague Auditorium: The Moon Before Apollo—concepts about the origin, evolution, and composition of the Moon, and unmanned precursor Missions (Orbiter, Ranger, Surveyor); 2-3 p.m., Boeing flight processing facility guided public tours, Monday-Friday, July 17-21 (contact Julia Sorrels, 280-2023, for reservations);

July 18: 11 a.m.-2 p.m., Speakers program, Teague Auditorium: Planning the Apollo Missions—mission operations, communications, guidance, software, propulsion, thermal protection and landing dynamics discussed by key project engineers.

July 19: 11 a.m.-2 p.m., Speakers program, Teague Auditorium: Apollo Scientific Results—program summary from the perspective of Apollo flight directors; Apollo Recovery Reunion, (time yet to be determined) all Navy personnel who participated in recovery operations are invited, kick-off at the Kings Inn, contact Charles Fillet, 333-3919.

BUBBLE, BUBBLE—The overshooting tops of a series of strong thunderstorms over Africa's Ivory Coast were photographed by the STS-30 crew. Taken with the Linhof camera, this south-looking view was taken at sunset, producing shadows that accentuate the shapes and heights of the clouds.

Child care plans focus on quality

(Continued from Page 1)

approval by the corporation membership, will be competitive with commercial child care providers in the Clear Lake area, she said. Rates are expected to be \$70-\$80 per week for each toddler or preschooler, she said.

Although specific policies and procedures will be decided by the membership, tentative plans call for the facility to operate by the standards set by the National Association for the Education of Young Children (NAEYC) in terms of staff qualifications and child-to-caregiver ratios.

The facility will operate from 7 a.m. to 5:30 p.m. Monday—Friday, closed on government holidays. Two snacks will be provided daily. Lunches are to be brought from home and may be microwave-heated by staff members.

In a feasibility study survey, 89 percent of the 2,170 on-site employees responding said they would consider using such a facility. They indicated their most important considerations in choosing child care facilities are, in order: 1) staff education

and experience; 2) ratio of caregivers to children; 3) quality of the educational programs provided; and tied for 4) cost and convenience of location.

The study committee also looked at the child care facilities at other NASA centers. The majority of those facilities operate as separate, non-profit organizations. After considering other options, including contracting a national child care chain to run the facility, the JSC committee decided to establish Space Family Education Inc. as a non-profit corporation, Allen said.

"Forming a non-profit corporation will help: 1) contain the costs, since we will not have to worry about a profit margin; 2) keep control within the JSC family, since the parents, as members of the corporation, will help to set policy and maintain quality, and 3) to ensure staff quality," Allen explained.

The committee conducted a phone survey of 31 of the 42 child care centers within a five mile radius of JSC, including Friendswood. The results indicated that while care was generally available (except for infants), only a small number of

centers exceeded the Texas state requirements, among the lowest in the nation.

"Our current plan includes 11 full-time and two part-time employees, with all teachers having at least associates degrees in early childhood education," said Allen.

The building will be a modular design, which can be eventually doubled in size if necessary. There will be individual rooms for each of the different age groups, a kitchen and a dining area. A large outdoor playground will feature outmoded space station mock-ups which have been modified to fit the safety requirements of small children.

"While the center is providing the building, the corporation will need to raise money for the furnishing, equipment and start-up costs," said Allen.

"Our first fundraiser is to sell children's specially designed NASA jogging suits and sleepers," she said. "And we'll be looking for many other ideas as soon as the fundraising committee is formed following our initial sign-up meeting."

Space News Roundup

The Roundup is an official publication of the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Texas, and is published every Friday by the Public Affairs Office for all space center employees.

Editor Kelly Humphries
Associate Editor Linda Copley

Astronauts picked

(Continued from Page 1)

Springer flew as a mission specialist on STS-29 in March. Culbertson, Meade and Gernar will be making their first space flights.

Bluford is a veteran of two shuttle missions, STS-8 in August 1983, and STS-61A in October 1985. Hieb and Veach will be making their first trips to orbit.

Columbia processing continues for STS-28

(Continued from page 1)

In the Vehicle Assembly Building, close outs of the solid rocket booster field joints are in work and the final hookups of the solid rocket booster electrical cables continue. Also, in an adjacent upper level test area, the external tank is undergoing its final check before mating with the boosters. The ET/SRB mate is scheduled for early next week followed by final close outs to prepare the stack for *Columbia* in mid-June.

The STS-28 stack is scheduled to roll to launch pad 39-B in late June or early July. About the same time, the flight crew will take part in the first of three joint integrated simulations leading up to a launch no earlier than July 31.

In other news, the Galileo planetary spacecraft destined for the planet Jupiter arrived at the Kennedy Space Center on Tuesday night aboard an environmentally controlled truck. It was escorted to the planetary spacecraft checkout facility.